LANGUAGE AND LITERACY PROBLEMS IN ALBERTA'S LABOUR FORCE

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EXECUTIVE SUMMARY

Questions arise periodically regarding the effects of language difficulties on the health and safety of workers. Problems may be experienced by persons whose native language is not the language of the workplace, and by persons who are illiterate. The basic issue is whether or not persons in these two categories are adequately informed regarding health and safety at work; can they read and understand instructions regarding safe procedures, can they inform themselves about workplace hazards, and can they inform themselves about their rights and obligations contained in the relevant legislation? Since most publications and instructions on these topics in Alberta are in English, persons who do not speak English, or who have poor reading comprehension, could be at a disadvantage.

The purpose of this report is to assess the extent to which language-related and literacy-related difficulties may occur in the Alberta labour force. The 1981 Canada Census provided most of the data in this report, since it contained the most recent and reliable available estimates of languages spoken and education level for major industry and occupation groups. There are no statistics on the frequency of workplace injury or illness of persons with language difficulties (such information is not available on accident reports). This report can only estimate the potential for language-related and literacy-related health and safety effects.

Language

In 1981, 7% of the Alberta population spoke a language other than English or French in the home, and 1% could speak neither English nor French. However, persons who spoke neither English nor French were generally not very active in the labour force.

Recent immigrants do, however, participate in the labour force at a fairly high rate (over 70% were working). Recent immigrants are employed mainly in the manufacturing and service sectors, and were over-represented in some of the unskilled or semi-skilled occupations, such as processing, machining, and fabrication and repair.

Based upon available statistics, the extent of spoken language difficulties in the labour force does not appear to be widespread. Only a small number of workers do not speak English, and it is likely that many of them are employed in settings in which their ethnic language is the principal language of work (e.g. hotels, custodial services, restaurants). These workers could receive instruction in their own language, from a supervisor who is fluently bilingual.

Literacy

Since there is no direct indication of the degree to which illiteracy exists in the Alberta labour force, this report conforms to common practice and uses level of education (less than grade 9) as an indicator of the extent of illiteracy.

In 1981, 7.5% of the employed labour force (age 15-64) had less than grade 9 education, and a further 28.4% had not completed high school. These rates are among the lowest in Canada, and have declined steadily since 1981. Older workers (age 45 and older) are more likely to have less formal education, especially to have less than grade 9. While less than 3% of young employed workers are this poorly educated, approximately 25% of this age group do not complete high school. To the extent that increasing technology demands greater literacy from workers, these young poorly educated workers could find themselves functionally illiterate in many occupations as they get older.

The worker with little formal education is most frequently employed in the following occupations: service, farming, forestry, oil and gas fieldwork, processing, transport, and material handling. Over 50% of workers in the these occupations, even the youngest age group, have not completed high school, and over 50% of older workers (age 45 and older) in forestry have less than grade 9. These are all unskilled or semi-skilled occupations, and these workers are exposed to a wide variety of physical dangers and health hazards.

Although the trend is toward a more educated work force generally, there remains a large number of workers in some occupations who are poorly educated. Many of these people are young, and will remain in the work force for many years. Health and safety issues related to language skills, then, will likely exist for many years to come.

Assistance Programs

Courses teaching English as a second language (ESL) are available in many centers throughout Alberta. Some of these courses, which are specifically designed to prepare immigrants for employment, graduate an estimated 1,500 people annually.

Other ESL courses may attract 5-10 times as many people, though the relevance of these courses to employment (versus daily living needs, for example) is not known.

Basic adult education courses are also available throughout Alberta, mostly offering high-school equivalency courses. Such courses (both credit and non-credit) serve at least 10,000 persons per year. However, enrollment in courses offered by Alberta Vocational Centres (AVCs) specifically designed to

combat illiteracy is quite low (only 226 registrants in 1984-85). There are, in addition, over 20 community based literacy projects throughout the province, but it is not known how many people are served by them.

Compared with other provinces, Alberta has the highest rate of participation in adult education courses of all types, but very few of these participants enroll in academic courses. Also, statistics indicate that the groups most in need of furthering their basic education skills are least likely to participate, while persons with university degrees are the highest consumers of adult education. For some reason, adult education has not been an attractive option for workers with little formal education.

Summary & Conclusions

In terms of the number of people affected, the potential for language related health and safety difficulties appeared to be relatively small in 1981, and has probably decreased since that time with the decrease in immigration. However, while the number of persons not speaking English is small, the degree of fluency of those who claim to speak English is unknown, and there is no information on the extent to which immigrants understand health and safety material written in English.

Difficulties arising from a low education level could be significant, given the number of poorly educated persons in the labour force. A large proportion of the labour force has not completed high school, and with the increasing importance of technical information, many workers may be unable to inform themselves adequately about health and safety issues. However, there are no data which describe the current knowledge and understanding of these issues by workers with little formal education.

This report was unable to address directly the relationship between language difficulties and health and safety. Research on this question has failed to determine whether or not these groups of workers do in fact have a poor understanding of work place hazards or safe task procedures. Nevertheless, the inability to read or understand English sufficiently well could place an extra burden on workers. Employers should be reminded of their duty to ensure that workers fully understand correct task procedures, and workers should be made aware of their responsibility to be fully informed.

The Ontario Advisory Council on Occupational Health and Occupational Safety argued that the problem lay not with illiteracy and language fluency itself, but rather with "insufficient or inappropriate instruction and training". The focus on foreign language and illiteracy directs attention to a relatively small number of workers, and may divert attention from the education needs of all workers.

The issue, in general, is how to ensure that all workers understand what is expected of them and what they have the right to expect from the employer and the government in the area of health and safety. To single out workers with language or literacy difficulties is to ignore the possibility that literate, English speaking workers and employers in Alberta might be equally uninformed regarding these general areas of health and safety education. Rather than focus on the extent of language or literacy problems, perhaps the extent to which the workforce <u>in general</u> is knowledgeable about general health and safety matters should be determined.

1. INTRODUCTION

1.1 Purpose of Report

Occasionally, questions arise regarding the health and safety experience of workers with language difficulties. Problems understanding English instruction, training, or warning signs, can arise because a) the worker's native language is not English, and/or b) the worker has a low level of literacy in the English language. The basic issue is whether or not persons in these two categories are adequately informed regarding health and safety at work; can they read and understand instructions regarding safe procedures, can they inform themselves about workplace hazards, and can they inform themselves about their rights and obligations contained in the relevant legislation? Since most publications and instructions on these topics in Alberta are in English, persons who do not speak English, or who have poor reading comprehension, could be at a disadvantage.

The purpose of this report is to present statistics which will indicate the degree to which language and literacy problems may exist in the Alberta workplace. The principal source of this information is the 1981 Canada Census. These data are used to assess the extent of potential language and literacy related problems in Alberta industries and occupations. This report was unable to address questions of more direct relevance to health and safety, such as: do these two groups in fact experience greater occupational injury and illness rates, and are these two groups relatively unaware of health and safety regulations, or procedures? Published research (Lee & Wrench, 1980; Baker, 1987) found no evidence for a

relationship between ethnic origin and accident rates, but these studies did not focus their research specifically on language difficulties.

1.2 Experience from Other Jurisdictions

The potential for language to adversely affect health and safety has been recognized in several jurisdictions. In Europe, where there are sizeable groups of migrant workers (i.e. temporary residents), regulations exist which require health and safety information in the worker's own language, and in some cases interpreters may be provided (see Heath, 1982). In Great Britain, the National Centre for Industrial Language Training supports the development of language training programs which include, and sometimes emphasize, basic health and safety vocabulary.

In 1980 these issues were considered in Ontario, with recommendations for translation of educational, health, and safety material into several large minority languages (Government of Ontario, 1980). Subsequent to these recommendations, the Ontario Ministry of Labour published a booklet outlining the rights, responsibilities, and duties of workers in five languages (Italian, Portuguese, Greek, Chinese, and Spanish).

1.3 Non-English Speaking Workers

The non-English speaking worker in Alberta could be exposed to a higher level of occupational hazard due to a number of language-related difficulties (Fernandes, 1985). Many hazards, particularly chemical hazards, are identified by signs and symbols which are likely easy to learn (easy by comparison with learning a new language, that is), and probably do not present a long term

difficulty for new immigrants. However, written and spoken instruction and information regarding safe work procedures and practices may take more time for the non-English speaking worker to comprehend. While all workers need to understand this sort of information, it may take additional instruction or actual demonstration for the new immigrant worker to understand completely.

However, even if language itself is not causing a problem, cultural differences might. Persons from non-Western cultures may have different values regarding workplace health and safety, regarding labour-management relations, and regarding the rights and duties of workers. While it is not the purpose of this report to expand on this point, it may be important to consider that new immigrants experience occupational difficulties which may arise from cultural differences rather than language differences.

1.4 Literacy in the Labour Force

The level of literacy in the workforce may also be an important factor in the occupational health and safety experience of workers. In some respects, the illiterate person has the same health and safety problems at work as the new immigrant. Both are faced with the inability to read instructions in English, which could place them at risk in the workplace. However, unlike the new immigrant, the illiterate has little or no difficulty with verbal instructions, and does not need to adjust to a new culture.

Illiteracy and low reading comprehension levels have not been studied extensively in relation to occupational health and safety. However, it is widely believed to be a significant factor in industrialized countries (Heath, 1982). Heath reports that some employers believe that

workers' reading ability has diminished to such an extent in recent years that they consider it a good idea to test for comprehension before assigning a complex task that requires reading. This widespread belief in a literacy problem has led to a heightened awareness in some countries of the possibility that one's employee might not be literate. It has also prompted the producers of educational material to use more diagrams, pictures, and a simpler language, in health and safety publications (this is done by the Education Branch of the Occupational Health and Safety Division).

The successful illiterate worker relies upon close observation and memory in order to learn how to perform new tasks, and is likely to perform safely so long as there is a model to copy. But the illiterate worker typically has difficulty when assigned new tasks, especially tasks which involve new technology, procedures, etc. (see, for example, Ritts, 1986). These workers generally conceal their handicap from fellow workers and supervisors and will be more likely to feign understanding of written instruction rather than ask for verbal instructions. The difficulty is to identify illiterate workers, since they will seldom admit that they cannot read, and have developed skill at concealing it. Making instructions available in very simple English with many diagrams and pictures (like comic books) will be a short-term solution only; as higher technology is introduced in the workplace such a solution will become inadequate for describing complex tasks.

1.5 Data Sources

The information contained in this report is an attempt to identify the extent to which language and literacy present difficulties in the Alberta workplace. However, no direct measures are available, and this report must rely upon indirect substitutes. The language statistics are derived from the Canada Census, which reports which languages (official and otherwise) are spoken in Canadian homes. When people are asked to report a foreign language, or first language spoken, their responses are simple to interpret. However, there may be some uncertainty when individuals are asked to report whether English is spoken or not. The respondent must make a decision regarding how much English fluency defines an English-speaking person, and for the purpose of identifying language problems in the workplace, the respondent's judgement may be inadequate. In other words, census figures may underestimate functional language difficulties.

Estimating the prevalence of illiteracy in the workplace is much less precise. In the absence of a convenient and reliable measure, years of schooling is typically used as an indicator of illiteracy (Government of Ontario, 1985). However, illiteracy is not the only reason for incomplete schooling, and illiterates do attain high school graduation. Therefore, although this report will follow standard practice and consider level of schooling (less than grade 9, less than high school graduation) to indicate the prevalence of illiteracy, such a definition will not reliably identify an illiterate worker.

Literacy is most usefully defined in functional terms rather than in absolute terms. The relevant question for occupational health and safety becomes "Can this person read well enough to perform the task safely?" rather than "Can this person read at a grade 10 level?" The necessity to substitute a grade level to indicate the extent of illiteracy (rather than using a direct measure of reading ability), coupled with the tendency of illiterates to conceal their handicap, seriously limits the reliability and validity of the estimates of illiteracy which are based upon educational attainment.

2. LANGUAGES IN THE ALBERTA LABOUR FORCE

During the past decade many thousands of people immigrated to Alberta from foreign countries. These people came from many parts the world, (primarily Europe and Asia) and joined an expanding labour force in the province. Although there has been a decline in immigration since 1981 (see Table 1), foreign workers continue to enter the workplace. The majority of recent immigrants are from Asia, but South America has contributed an increased proportion of new arrivals. The tables which follow attempt to show the potential for health and safety problems in the workplace.

Since there are no data describing the languages used in the Alberta workplace, indirect methods must be used to estimate the potential for language problems. The data described below (from the Canada Census, 1981) show the languages spoken in Alberta homes, the number of people who speak neither English nor French, and the employment characteristics of (a) recent immigrants, and (b) persons whose first language was neither English nor French. While these statistics can certainly shed some light on the magnitude of the language question, they cannot identify specific language groups who are at risk due to their inability to understand English instructions, warnings, training, or legislation. Neither can these statistics identify the cultural differences which may make the understanding of health and safety related issues more difficult.

TABLE 1

IMMIGRATION TO ALBERTA BY CONTINENT OF ORIGIN

1981 - 1985

CONTINENT	1981	1982	1983	1984	1985	TOTAL
Europe	8,219	7,682	2,609	2,017	1,573	22,100
	42.6%	42.8%	24.4%	18.9%	17.5%	32.7%
Africa	810	717	898	896	718	4,039
	4.2%	4.0%	8.4%	8.4%	8.0%	6.0%
North America (United States)	1,679	1,435	877	822	727	5,540
	8.7%	8.0%	8.2%	7.7%	8.1%	8.2%
Central and South America	1,119	1,203	1,090	1,020	1,295	5,727
	5.8%	6.7%	10.2%	9.5%	14.4%	8.5%
Asia	6,965	6,444	5,027	5,733	4,533	28,702
	36.1%	35.9%	47.0%	53.7%	50.4%	42.5%
Australia and South Pacific	502	467	193	182	155	1,499
	2.6%	2.6%	1.8%	1.7%	1.6%	2.2%
TOTAL	19,294	17,948	10,694	10,670	9,001	67,607
	100%	100%	100%	100%	100%	100%

Source: Alberta Career Development and Employment, "Employment Report: Immigration to Alberta" Nov. 1986.

2.1 Languages Spoken in Alberta Homes

Table 2.1 indicates the major languages spoken in Alberta homes. The vast majority of individuals (91.7%), as expected, speak English at home; 1.3% speak French, and 7% speak other languages. Only a very few (1.2% of the total population) cannot speak English. (Table 2.3)

The 20 most common foreign languages used in the home are listed in Table 2.2. Most common among these are German, Chinese, Ukrainian, and Cree. The most common languages of those speaking neither English nor French (Table 2.3) are Chinese, German, and Indo-chinese, the latter no doubt reflecting the recent immigration of the Vietnamese. Table 2.3 also indicates the proportion of each language group which does not speak an official language. The highest values here, for Chinese, Indochinese, and Portuguese, probably reflect recent immigration from these countries.

2.2 Demographic Characteristics

About 60% of persons who speak neither English nor French are women (see Table 3.1). Table 3.1 also reveals that 53.5% of this language group are either too young or too old to be part of the labour force. In contrast, of all persons who speak a foreign language in the home, only 34.3% were either too young or too old to be working (see Table 3.2). It is also evident from the statistics that, in the foreign language group, women are less likely than men to learn English. It may be that older immigrant women do not join the labour force, but instead remain in the home where only a foreign language is spoken.

TABLE 2

LANGUAGES SPOKEN IN ALBERTA HOMES, 1981

1. Languages spoken by individuals at home: General

	#	%
English	2029495	91.7
French	29550	1.3
Other languages	154600	7.0
TOTAL	2213645	100.0

2. Common languages spoken by individuals who also speak English or French

German	25930	Dutch	3930
Chinese	22220	Semitic	3445
Ukrainian	16365	Portuguese	3430
Cree	9725	Croat-Serbian	3215
Indo-Pakistani	8990	Hungarian	2995
Italian	7655	Philippino	2595
Indo-Chinese	5535	Greek	2090
Polish	4720	Czech-Slovak	2065
Spanish	4640	Korean	1525
Native Indian	4120	Russian	1470

3. Common languages of persons speaking neither English nor French

		% of Language Group*
Chinese	6965	24
French	3705	13
German	2190	8
Indo-Chinese	1970	26
Ukrainian	1310	7
Indo-Pakistani	1265	12
Cree	1125	10
Italian	1060	12
Portuguese	955	22
Spanish	775	14
Polish	610	11
Other	4200	
TOTAL	26130	14.5

* The language group consists of all persons speaking the language, whether or not they also speak English or French.

Source: Statistics Canada Catalogue 92-910.

TABLE 3

AGE AND SEX CHARACTERISTICS OF
FOREIGN LANGUAGE SPEAKERS
ALBERTA, 1981

1. Persons who speak neither English nor French

Age	Men		Women		Total	
	#	%	#	%	#	%
Less than 15 yrs	3695	42.2	3250	23.8	6945	31.0
15-64 yrs	3710	42.4	6715	49.2	10425	46.5
Over 64 yrs	1355	15.5	3695	27.0	5050	22.5
TOTAL	8760	100.1	13660	100.0	22420	100.0

2. Persons who speak a foreign language at home.

Age	Men		Women		Total	
	#	%	#	%	#	%
Less than 15 yrs	15140	20.0	14360	18.2	29500	19.1
15-64 yrs	50155	66.2	51410	65.3	101565	65.7
Over 64 yrs	10515	13.9	13000	16.5	23515	15.2
TOTAL	75810	100.1	78770	100.0	154580	100.0

Source: Statistics Canada Catalogue 92-910.

2.3 Labour Force Activity

Table 4 contains information on the labour force activity by ethnic and language background. This table indicates the participation rates, unemployment rates, and occasional work rates for all immigrants, recent immigrants, persons who speak French, and persons who speak neither official language. These data reveal several distinctive features regarding the general employment activity of immigrants and non-English speaking persons.

Recent immigrants (1971-1981) had a higher rate of labour force participation when compared with the total immigrant population (75.4% vs 64.4%), and were more likely to have had occasional work (7.3% vs 6.4%, see Table 4.1). The immigrant population as a whole also had a lower unemployment rate (3.0%) than the Canadian-born population (3.9%). While these figures (particularly the participation rates) may indicate that recent immigrants were more eager to join the work force, it should be noted that recent immigrants will be younger, on average, than persons who arrived in Canada prior to 1971.

By comparison with immigration status, language status (Table 4.2) had much stronger effects on labour force activity. Persons speaking only French had a low participation rate (54.4%), but even lower was the rate for persons speaking neither official language (40.9%). The unemployment rate was also high for non-English speakers, particularly for French speakers (15.4%). Also, persons in the "other only" category were less likely to have had occasional work (5.2%), while the French-only group had the highest rate of occasional work (10.4%). The employment activity of these minorities, particularly the French minority, appears to be very unstable, with a

large proportion having only occasional work. The "other only" language group, while less likely to seek employment, did experience more stable employment than persons speaking French only.

Comparisons among groups in terms of first language spoken (Table 4.3) reveals an activity pattern similar to the previous analyses. The "other" category, like the immigrant category, had the lowest participation rate, the lowest unemployment rate, and the lowest occasional work rate.

The population figures in Table 4 also indicate the extent to which persons whose first language was not English subsequently learn English. Only 4.2% of people whose first language was French speak only French, and only 4.9% of speakers of other languages have not learned English. The great majority of immigrants to Alberta eventually do learn English.

From these workforce activity data, it does not appear that English language fluency was a serious impediment to employment in Alberta, except for the small number of people who spoke no English. While immigrants, particularly the older people, are less likely to participate in the labour force, their unemployment rate was relatively low. This was particularly true for immigrants who learn English; those who speak neither English nor French may have some difficulty getting employment, though the absolute number of such persons is very small. Certainly, the data show that immigrants are more successful in the labour force than native French-only speakers, but it is impossible to attribute these difficulties to language alone.

TABLE 4

LABOUR FORCE STATISTICS FOR ETHNIC AND LANGUAGE GROUPS
ALBERTA, 1981

Group	Population[1] (% of Total)	Participation[2] Rate (%)	Unemployment Rate (%)	Occasional[3] Work Rate(
1. Immigration Status				
Canadian born	1341675 (80.2)	73.5	3.9	8.2
All Immigrant	330945 (19.8)	64.4	3.0	6.4
Immigrant 1971-81	101650 (6.1)	75.4	3.7	7.3
2. Language Spoken				
French only	2215 (0.1)	54.4	15.4	10.4
Other only	15480 (0.9)	40.9	6.1	5.2
3. First Language				
English	1302245 (77.9)	73.5	4.0	8.2
French	52580 (3.1)	72.5	4.6	7.4
Other	317795 (19.0)	64.6	3.1	6.6
PROVINCIAL TOTAL	1672620	71.7%	3.7%	7.8%

NOTES:

1. Population 15 years of age and older
2. The participation rate refers to the proportion of people 15 years of age and older who are either employed or seeking employment.
3. Occasional work rate refers to people no longer in the labour force, but who had some work in the previous year. The rate is a percent of the population.

See Appendix A.1 for detailed labour force information.

Source: Statistics Canada Catalogue 92-915

2.4 Employment in Major Industries and Occupations

Table 5 shows how recent immigrants to Alberta are employed in the major industrial sectors. The majority of recent immigrants were employed in service, manufacturing, and trade industries. By comparison with the distribution of the total labour force, recent immigrants were more likely to be employed in the manufacturing (15.6% vs. 9.0%)) and service (39.1% vs 28.2%) sectors, and less likely to be employed in trade (12.9% vs 17.0%) or agriculture (2.1% vs 6.9%).

An analysis of first language spoken and industry of employment (Table 6) revealed that, compared with native English speakers, foreign language speakers were under-represented in trade, transportation & utilities, mines, oil & gas, and finance, and over-represented in agriculture, manufacturing, and to some extent, service. Native speakers of French were over-represented in the construction industry and under-represented in the mines oil and gas, and the trade industries.

Comparing recent immigrants (Table 5) with all immigrants (the "other" group in Table 6) also reveals industry differences. Recent immigrants were more likely to be in manufacturing and service industries, while the foreign language group as a whole (and by implication, older immigrant groups) are more frequently employed in agriculture and construction.

The occupations of recent immigrants are shown in Table 7. Compared with the total Alberta labour force, this group was more likely employed in science and engineering, service, machining, fabrication and repair, and processing occupations (Table 7.2). Although recent immigrants account for only 6.4% of the Alberta work

TABLE 5

EMPLOYED LABOUR FORCE: RECENT IMMIGRANTS (1971-1981)
BY INDUSTRY
ALBERTA, 1981

Industry	Labour Force		Recent Immigrants	
	Total	%	Total	%
Agriculture	82755	6.9	1590	2.1
Forestry	4050	0.3	105	0.1
Fishing & Trapping	285	0.0	5	0.0
Mines, Oil, Gas	76945	6.4	4235	5.6
Manufacturing	108005	9.0	11865	15.6
Construction	128805	10.8	6185	8.1
Trans., Utilities	100375	8.4	4710	6.2
Trade	202680	17.0	9775	12.9
Finance	65860	5.5	3720	4.9
Service	336745	28.2	29695	39.1
Public Admin.	88675	7.4	4130	5.4
Total	1195180	100.0	76015	100.0

Source: Statistics Canada Catalogue 92-922

TABLE 6

EMPLOYED LABOUR FORCE: FIRST LANGUAGE SPOKEN
BY INDUSTRY
ALBERTA, 1981

Industry	First Language Spoken					
	English		French		Other	
	#	%	#	%	#	%
Agriculture	58875	6.2	2180	5.7	21700	10.6
Forestry	2940	0.3	200	0.5	910	0.4
Fishing & Trapping	210	0.0	20	0.0	55	0.0
Mines, Oil, Gas	66420	7.0	1920	5.1	8600	4.2
Manufacturing	81095	8.5	3590	9.5	23315	11.4
Construction	98895	10.4	6660	17.6	23255	11.4
Trans., Utilities	83510	8.8	2895	7.6	13970	6.8
Trade	168060	17.6	5650	14.9	28975	14.2
Finance	56090	5.9	1760	4.6	8010	3.9
Service	264765	27.8	10005	26.4	61965	30.3
Public Admin.	72065	7.6	3045	8.0	13560	6.6
Total	952925	100.0	37925	100.0	204315	100.0

Source: Statistics Canada Catalogue 92-922.

TABLE 7

SELECTED OCCUPATIONS OF RECENT IMMIGRANTS; ALBERTA, 1981

1. Occupations of recent immigrants.

Occupation	Immigrants 1971-1981	% of All Recent Immigrants
Management	5980	7.9
Science, Engineering	7020	9.2
Clerical	11715	15.4
Service	14570	19.2
Fabrication, Repair	6630	8.7
Construction	5695	7.5
ALL OCCUPATIONS	76020	

2. Occupations having a relatively high proportion of recent immigrants

Occupation	Provincial Total	Immigrants 1971-1981	% of Total in Occupation
Science, Engineering	54905	7020	12.8
Service	132350	14570	11.0
Processing	24090	2515	10.4
Machining	26725	3320	12.4
Fabrication, Repair	62645	6630	10.6
ALL OCCUPATIONS	1194965	76020	6.4

See Appendix A.2 for complete list of major occupations.

Source: Statistics Canada Catalogue 92-918

force, they make up more that 10% of these occupations. With the exception of science and engineering, these are unskilled or semi-skilled occupations, some of which involve considerable exposure to hazards.

2.5 Summary

In 1981, only a small percentage of the Alberta population did not speak English, and over 50% of these persons were either less than 15 or more than 65 years of age. Approximately 7,500 non-English speaking persons (including French only) were in the Alberta labour force. This represents only 0.6% of the entire labour force. Information about the industries in which these persons were employed was not readily available, but some indication is given by the employment of recent immigrants. Over 67% of recent immigrants are employed in the service, manufacturing, or trade industry sectors (compared with 54% of the entire labour force in these industries). A comparatively large proportion of older immigrants are employed in agriculture.

Recent immigrants most frequently worked in service or clerical occupations. While accounting for only 6.4% of employed persons, recent immigrants made up over 10% of the processing, machining, fabrication, service, and science/engineering occupation groups. These occupations, except the latter two, experience considerable exposure to health and safety hazards.

It is likely that non-English speaking workers were employed in settings in which the ethnic language is the principal language of work; for example, in hotels, restaurants, or custodial service industries there are many jobs that require limited working knowledge of English, and small manufacturing businesses could be

operated entirely by an single ethnic group. These people may also be able to function reasonably well in a large establishment which employs many bilingual immigrants from the same language group. In such settings the supervisor may be fluently bilingual, and be able to instruct employees in their own language.

The difficulty with the available information is that the true extent of the problem is unknown. It could well be that very few non-English speaking workers have health and safety problems which are due to poor language skills. Or, the potential for such problems may be underestimated by these statistics, since they do not reflect the degree to which immigrants have (or require) a functional use of English.

3. EDUCATION LEVEL IN THE ALBERTA LABOUR FORCE.

Since there is very little direct indication of the degree to which illiteracy exists in the Alberta labour force, the information presented below discusses the education level of Alberta workers. Specifically, these data will describe the employment activity of persons who have not achieved a high school education, and those who have not completed a grade 9 level education. These statistics include the large majority of persons considered illiterate by most common definitions, though no doubt some are not included, and many people who do not complete high school are nevertheless literate. Despite these deficiencies in the data, the following tables indicate the employment activity of persons who may experience difficulty understanding written information.

3.1 Labour Force Activity

Table 8 shows the labour force activity of persons with less than high school education for three age groups (15-24; 25-44; and 45-64 years). Two general trends are shown here: the participation rate increases with the amount of schooling, and the unemployment rate decreases with greater amounts of schooling. These trends are particularly strong for the youngest age group.

A small percentage (4.1%) of the youngest age group (15-24 years) had less than a grade 9 education. This group of uneducated young people had a high unemloyment rate (12.7%) and a low participation rate (50.9%) in 1981. This group was the least likely to be seeking work, and the most likely to have difficulty finding work. Although

TABLE 8

LABOUR FORCE STATISTICS: AGE BY EDUCATION LEVEL (1981)

Age Group	Population (% of Age Group)	Participation[1] Rate (%)	Unemployment Rate (%)	Occasional[2] Work Rate
Age 15-24				
less than grade 9	19365 (4.1)	50.9	12.7	11.4
less than high school	217390 (45.6)	61.4	7.2	14.2
in school (age 15-19)	130415 (27.4)	47.2	5.5	19.6
Total	476315	73.7	6.0	11.3
Age 25-44				
less than grade 9	40835 (5.9)	71.5	5.2	7.9
less than high school	167105 (24.1)	76.9	3.8	7.4
Total	692960	82.5	3.0	6.4
Age 45-64				
less than grade 9	82080 (23.0)	62.0	3.3	6.9
less than high school	112260 (31.5)	68.1	2.4	6.8
Total	356745	71.6	2.3	6.4

1. Percent of population either working or seeking work.
2. Persons not in the labour force but who have had some work in the previous year, calculated as a percent of the population for the group.

See Appendix A.3 for complete details of labour force activity.

Source: Statistics Canada Catalogue 92-915

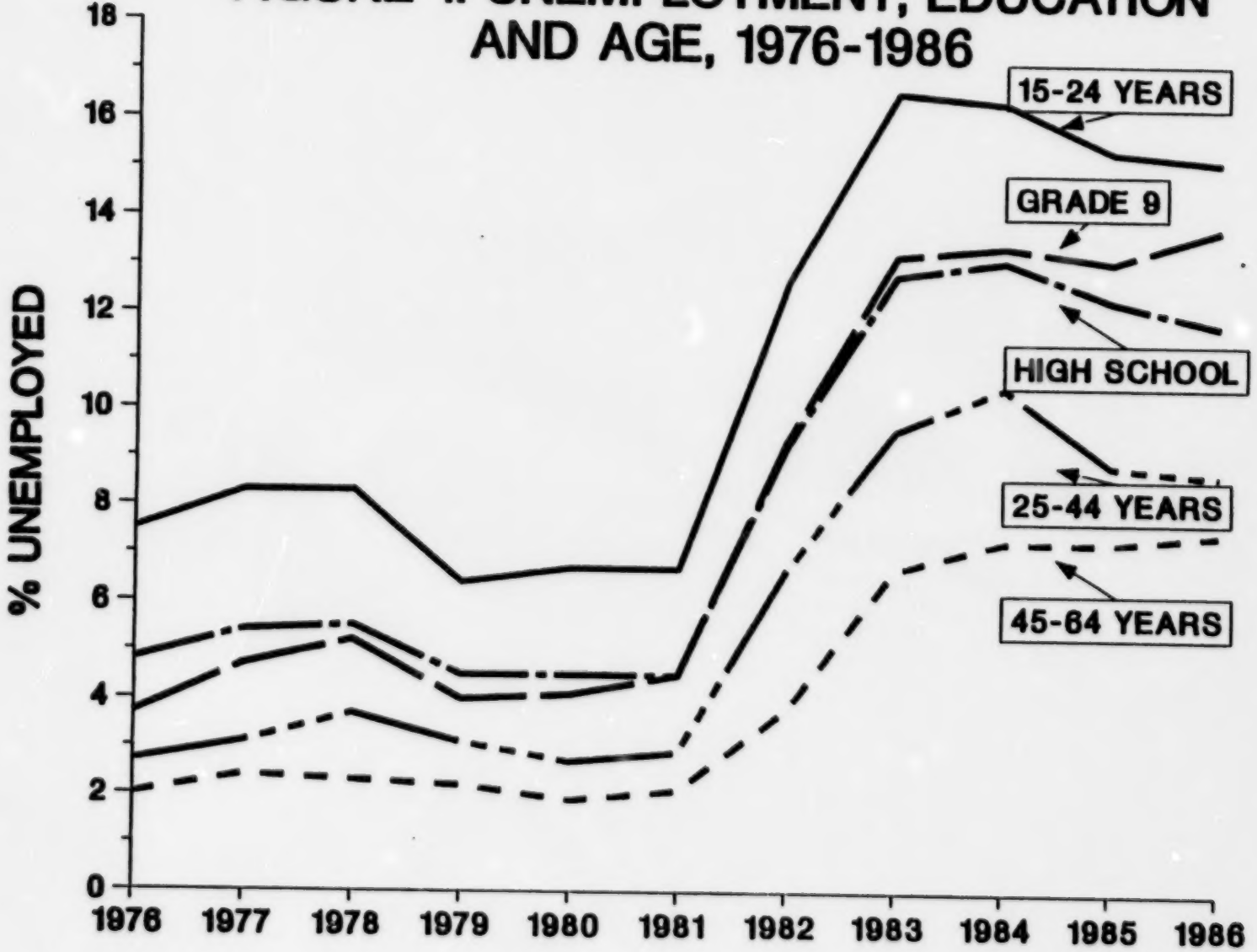
a high proportion (45.6%) of this age group had not completed high school, many of them were still attending school. It is estimated that approximately 24% of this age group did not complete or will not have completed high school (see Appendix A.4).

A small proportion (5.9%) of the middle age group (25-44 yrs.) had less than grade 9 education, and a further 24.1% of this group had not completed high school. However, compared with the youngest group, unemployment was not as great a problem for these less well educated workers; the unemployment rate of 25-44 year olds with less than grade 9 (5.2%) was lower than that of all of the youngest group.

The oldest group (45-64 years) was at the same time both less well educated and less subject to unemployment than the other two age groups. Over 30% of the older age group had not completed high school, and 23% had less than grade 9 education. Education level, or lack of education, did not appear to be a serious employment problem for older workers; only 2.4% of this group with less than high school education were unemployed in 1981.

The data presented in Table 8 were obtained in June 1981, at a time when unemployment rates in Alberta were low. Figure 1 graphically illustrates the unemployment rates for three age groups and two education groups from 1976 to 1986. These data show quite clearly that age rather than education level was more closely related to unemployment. The youngest age group was most strongly affected by the 1981 economic recession, even more than workers with less than grade 9 level education. The fact that the two low education groups experienced virtually identical unemployment rates until 1985 suggests that education level has not been an important determinant of

FIGURE 1: UNEMPLOYMENT, EDUCATION AND AGE, 1976-1986



SOURCE: STATISTICS CANADA

unemployment. Other factors, such as occupation, industry, and experience are likely to be more relevant. However, since 1985 older workers (45-64 yrs) and workers with less than grade 9 education experienced increased unemployment, while other groups shown in Figure 1 did not. Since there is considerable overlap between these groups, one cannot say whether age or education is related to this recent change.

3.2 Occupations and Industries

As shown in Table 8, a large number of workers in Alberta have not completed high school. While this is particularly true for the older group, significant numbers in the other two age groups did not complete high school. Tables 9 to 12 show how these relatively uneducated persons were distributed among the major industrial and occupational categories.

As shown in Table 9, persons with less than grade 9 worked primarily in the service, agriculture, and construction trades occupations. Persons without high school graduation were found mainly in clerical, service, sales, and construction trades occupations. Table 10 shows more clearly which occupation groups have the greatest proportion of relatively uneducated workers. While 8.4% of the total workforce had less than grade 9 education, this proportion was much larger in forestry, agriculture, service, processing, transportation, and material handling occupations (Table 10.1). While just over 33% of the total workforce had not completed high school, more than 40% of workers in these particular occupations were not high school graduates (Table 10.2).

TABLE 9

THE OCCUPATIONS OF UNDER-EDUCATED WORKERS
WITH LESS THAN HIGH SCHOOL EDUCATION, 1981

1. Less than grade 9

Occupation*	Number	%
Service	21255	21.1
Farming	19250	19.2
Construction trades	14065	14.0
Transport	7550	7.5
ALL OCCUPATIONS	100410	

2. Less than high school

Occupation*	Number	%
Clerical	77825	19.4
Service	60270	15.2
Sales	46035	11.6
Construction trades	40495	10.2
Farming	33025	8.3
Management	32750	8.3
ALL OCCUPATIONS	401565	

* See Appendix A.6 for complete list of occupations.

Source: Statistics Canada Catalogue 93-969

TABLE 10

OCCUPATIONS WITH A LARGE PROPORTION OF WORKERS WITH LESS THAN HIGH SCHOOL EDUCATION, 1981

1. Percent of Occupation with less than grade 9 education

Occupation*	Total	Less than Grade 9	% of Occupation
Forests & logging	3250	925	28.4
Farming	80215	19250	24.0
Service	132350	21255	16.1
Processing	24090	3760	15.6
Transport	52180	7550	14.5
Material handling	19630	2600	13.2
ALL OCCUPATIONS	1194965	100410	8.4

2. Percent of Occupation with less than high school education

Occupation*	Total	Less than High School	% of Occupation
Material handling	19630	10575	53.9
Oil & gas fieldwork	19180	8995	46.9
Transport	52180	25375	48.6
Service	132350	602670	45.5
Sales	109985	46035	41.9
Farming	80215	33025	41.2
Processing	24090	9980	41.4
ALL OCCUPATIONS	1194965	401565	33.6

* See Appendix A.6 for complete list of occupations.

Source: Statistics Canada Catalogue 93-969

As shown in Table 11, workers with less than grade 9 education made up over 20% of the employed labour force in agriculture, forestry, and fishing and trapping industries. The agriculture and the trade sectors also had a relatively large proportion of workers with incomplete high school (36.4%, and 38.0%, respectively), compared with all industries combined (28.6%).

Compared with the analysis by industry (Table 11), the analysis by occupation (Table 10) was a more efficient way to identify the types of employment available to workers with less than high school education. Since age was an important factor when describing the labour force activity of relatively uneducated persons (Table 8), the occupations having large proportions of these persons are shown by age group in Table 12.

For the whole province, Table 12 shows that while about 3% of young workers had less than a grade 9 education, almost 22% of older workers (45 years and older) were in this education group. For the selected occupations in Table 12.2 these proportions were considerably higher. Relatively high proportions of young workers in farming (7.8%) and forestry (15.9%) had less than grade 9 education, as did high proportions of older workers in these occupations (41.9%, and 56%, respectively). It is very clear that as a group, older workers in these occupations had less formal education to a degree not found for other age or occupation groups.

Table 12 also reveals that a substantial number (over 50%) of the 25-44 years old age group in these occupations either had less than grade 9, or had not completed high school. This group will likely remain in the work force for another 25 years on average.

TABLE 11

PERCENT OF WORKERS WITH LESS THAN HIGH SCHOOL EDUCATION BY INDUSTRY, 1981

Industry	Total Employed	Percent of Industry		
		Less than Grade 9	Less than High School	Total
Agriculture	82755	23.6	36.4	60.0
Forestry	4050	21.9	27.3	49.2
Fishing, Trapping	280	26.8	21.4	48.2
Mines, Oil, Gas	76945	5.3	23.7	29.0
Manufacturing	108005	9.3	30.8	40.1
Construction	128805	10.2	29.1	39.3
Transp. Utilities	100370	8.3	31.8	40.1
Trade	202680	5.8	38.0	43.8
Finance	65860	2.2	23.0	25.2
Service	336740	6.9	23.5	30.4
Public Admin.	88680	5.3	20.9	26.2
Total	1195170	8.2	28.6	36.8

Source: Statistics Canada Catalogue 93-969.

TABLE 12

AGE AND EDUCATION FOR SELECTED OCCUPATIONS

1. Age by Education for the whole Province (percent).

Age	Less than Grade 9	Less than High School	Total
15-24 years	2.9	43.3*	348590
25-44 years	5.3	27.1	570135
45+ years	21.8	33.2	276455
TOTAL	8.4	33.6	1195180

2. Age by Education for selected occupations (percent).

Occupation	Age	Less than Grade 9	Less than High School	Total
Service	15-24	4.5	57.3*	49430
	25-44	12.0	38.9	48115
	45+	38.1	38.1	34805
Farming	15-24	7.8	51.6*	17765
	25-44	12.5	39.7	28340
	45+	41.9	36.9	34105
Forestry	15-24	15.9	40.1*	1260
	25-44	28.3	30.7	1415
	45+	56.0	28.4	580
Oil and Gas Fieldwork	15-24	4.8	52.7*	7975
	25-44	9.5	44.0	8810
	45+	30.5	38.0	2395
Processing	15-24	5.4	49.6*	7850
	25-44	13.4	38.2	11040
	45+	35.7	36.0	5195
Transport	15-24	3.6	55.4*	14330
	25-44	11.5	47.7	26515
	45+	35.2	42.4	11320
Material Handling	15-24	4.8	60.1*	9655
	25-44	13.8	49.0	6950
	45+	39.0	45.3	3025

* Many of these persons are still attending school. See Appendix A.4.

Source: Statistics Canada Catalogue 93-969.

The less well educated workers in the youngest age group were also attracted to these occupations in fairly large numbers (over 50% of this age group in all these occupations except forestry had not completed high school). While many workers in this age group were probably still attending high school, it would be reasonable to estimate that 30% of young workers in these occupations will not complete high school (see Appendix A.4). Younger workers moving into these occupations will not greatly improve the average level of education in these occupations for many years to come.

As the needs of workers for occupation-related information increases due to technological changes and/or increased knowledge of health and safety issues, educators may be faced with the problem of communicating with a sizeable group of relatively uneducated workers in these occupations. It will likely be important to present such information at no more than a high-school level of language skills, and it will continue to be difficult to communicate complex and technical information to a large proportion of workers.

3.3 Trends in Educational Attainment

Since 1981 the proportion of relatively uneducated people in Alberta has steadily decreased. The trends in the education level of the employed labour force are shown in Table 13 and Figure 2. In 1986, persons with less than grade 9 constituted 11.3% of the population 15 years and older and 6.4% of the employed workers, a decrease from 13.6% and 9.0%, respectively, in 1981. In contrast, the proportion of the population with some post-secondary education increased from 30.5% in 1981 to 37.1% in 1986. During this same period, the proportion of the employed labour force with some post-secondary education increased

TABLE 13

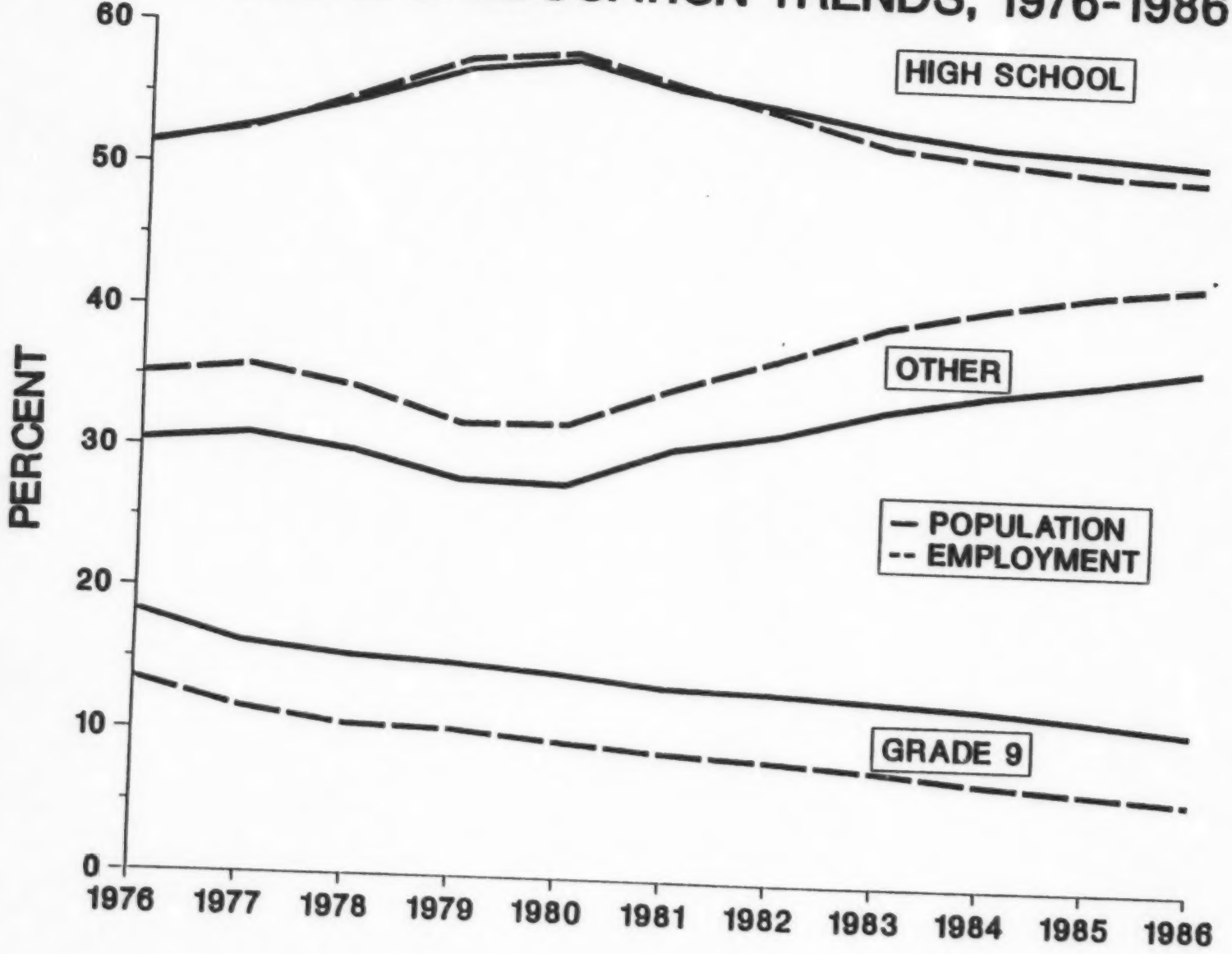
TRENDS IN EDUCATION LEVEL, 1976-1986
ALBERTA

YEAR	% of Population[1]			% of Employed		
	Less than Grade 9	High School[2]	Other[3]	Less than Grade 9	High School[2]	Other[3]
1976	18.3	51.3	30.4	13.5	51.4	35.1
1977	16.2	52.8	31.0	11.6	52.6	35.8
1978	15.4	54.7	29.9	10.5	55.1	34.4
1979	15.0	57.0	28.0	10.3	57.7	32.0
1980	14.4	57.8	27.8	9.6	58.3	32.1
1981	13.6	55.9	30.5	9.0	56.2	34.8
1982	13.4	54.9	31.7	8.6	54.3	37.1
1983	13.0	53.4	33.6	8.1	52.3	39.6
1984	12.6	52.5	34.9	7.1	51.5	41.1
1985	12.0	52.1	35.9	6.9	50.8	42.3
1986	11.3	51.6	37.1	6.4	50.5	43.1

Notes:
1. Refers to population 15 years and older
2. Includes both persons who have completed high school, and persons who have completed some schooling beyond grade 8.
3. Persons with some post-secondary education (diploma, certificate, some university, or university degree).

SOURCE: Statistics Canada Catalogues 71-001 and 71-529

FIGURE 2: EDUCATION TRENDS, 1976-1986



SOURCE: STATISTICS CANADA

from 34.8% to 43.1%. These statistics clearly indicate a better educated work force, but the specific industries or occupations where these changes are occurring cannot be identified until the 1986 Canada Census data are made available.

However, the trend in education level (except for the most poorly educated group) seems to depend very much on economic activity. During the period of economic prosperity, (between 1976 and 1980) the proportion of the employed labour force with post-secondary education decreased. These data suggest that the level of education in the work place will depend upon economic conditions; young people will be tempted to leave school when good paying jobs become plentiful, and will likely seek adult education opportunities when jobs become scarce. The only consistent trend, irrespective of economic changes, is the decrease in the number of persons with less than grade 9 education.

3.4 Summary

Data from the 1981 Canada Census show that nearly 100,000 persons in the Alberta labour force do not have a grade 9 education, and that nearly four times this number have not completed high school. Although older workers, as a group, are the least well educated, the data reveal that a substantial number of younger people, in the secondary education system since 1950, do not have a high school diploma. People with lower levels of education are less likely to participate in the labour force, are more likely to obtain only occasional employment, and experience somewhat higher unemployment rates. These trends are particularly strong for the younger workers.

The worker with less education finds employment mainly in occupations which require physical labour, including high hazard occupations such as forestry, farming, processing, oil and gas field work, and construction. Certainly, the less well educated worker is exposed to many health and safety risks, but there are no data which suggest that their level of education contributes to the risks. The data do indicate that prevention efforts directed toward these occupations should keep clearly in focus the low education level of the target audience if these efforts are to succeed in training and educating the workers on health and safety issues.

4. ADULT EDUCATION PROGRAMS

A Statistics Canada survey (Devereaux, 1984) revealed that in 1983, 19% of persons 17 years of age and over enrolled in at least one adult education course (this figure excludes full-time students). Of the provinces, Alberta had the highest rate of participation (25%), and of major cities, Calgary and Edmonton had the highest rates (27%) in Canada. In Alberta, almost half the participants enrolled in job-related courses (47%), and only 10% enrolled in academic courses (e.g. high school or University). Personal development, hobby, and recreation courses accounted for 41% of these participants' choices.

Participation in adult education in Canada is related to both education level and occupation. The participation rates of persons with less than grade 9 and less than high school were 5% and 12%, respectively. Persons with some post-secondary education and those with university degrees had rates of 32% and 41%, respectively. With respect to employment, the participation rate for "white collar" workers (33%) was over twice the rate for "blue collar" workers (16%). To the extent that these relationships are true for Alberta, it appears that adult education does not attract participation from those who may be most in need. The only exception to this general conclusion is that younger immigrants (less than 35 yrs.) are relatively high users (28%) of adult education opportunities during their first 4 years of residence in Canada.

Specific information concerning adult education in Alberta which is relevant to language and literacy difficulties is described in the following sections.

4.1 English as a Second Language (ESL) Programs

Non-English speaking immigrants to Alberta could approach the language task in a variety of ways, depending upon the person's particular language needs. Some may be employed in a family business, or in some small business where all employees speak the same foreign language, and English is not a condition of employment. Other persons, however, need English for their employment. For them, language training is available through Canada Manpower at several Colleges and Alberta Vocational Centres (AVCs) throughout the Province.

English as a Second Language (ESL) enrollment figures provide some indication of the extent to which immigrants make use of this service. Advanced Education reports enrollment in ESL credit courses at 1271 full-time-equivalent (FTE) persons at the AVC, and 344 FTE at various public colleges during the education year 1984-85. For the same year, Alberta Career Development and Employment (CDE) reports 3270 registrations in full-time ESL courses. There is likely considerable duplication among the persons represented by the FTE figures and the registration figures, but the degree of this redundancy is not known. Since FTE probably underestimates the number of individuals served, and registrations probably overestimate the number, a reliable enrollment figure is difficult to estimate. However, it may be reasonable to estimate that 1,500 new immigrants each year complete the ESL program in preparation for entry into the labour force.

In addition to persons taking ESL courses for labour force entry, larger numbers are enrolled in part-time and non-credit courses, both at AVCs and in locally sponsored programs (e.g. school board or community based classes). CDE reports over 25 thousand person-course registrations in such courses during 1985-86. However, the number of persons served is unknown, since many register in more than one course in a year. It is impossible to say how many of the part-time ESL students are in the workforce, or how many of these courses are related to work rather than to the social or daily living needs of recent immigrants.

It would seem from these figures that there are many facilities available to people who need to learn English. A more detailed analysis of course content is required in order to determine how well these courses address the health and safety aspects of the workplace. For example, inspection of a sample curriculum for a full-time ESL course offerred by AVC (Edmonton) reveals that while topics of health as they relate to life in Canada are included in lesson plans (e.g. visiting the doctor, the dentist, the public health facility, and general knowledge of good nutrition), health and safety at work is not addressed. However, such a topic could easily fit into much of the course content if appropriate materials were developed.

4.2 Basic Skills and Literacy

Opportunities exist in the larger centers throughout Alberta for persons wishing to complete their high school education. Credit courses exist at most vocational centres and public colleges. During the 1984-85 year, such courses served 6,880 full-time equivalent students

(Alberta Advanced Education, Statistical Report, 1984-85). Non-credit, basic adult education courses are also available at these institutions and at the technical institutes. There were 11,635 registrations for such courses processed during 1984-85 (many of these, however, could represent the same persons taking several courses). These figures indicate that at least ten thousand individuals return in a year to improve their level of education.

However, these high-school-equivalent courses do not directly focus upon the literacy problem in Alberta. A few courses titled "Basic Literacy" exist, offered by the Alberta Vocational Centres, and these served 226 registrants in 1984-85. In addition, in 1986, there were 23 projects on literacy based in school districts and communities throughout the province, but it is not known how many persons were served by them.

On a national level, as shown above, only a small percentage of less well educated workers take advantage of adult education opportunities. Only about 3% of these workers enroll in basic adult education courses, and only a few hundred per year register in adult literacy programs. One can speculate on the reasons for the low participation rate of people who would seem to have most to gain from furthering their education: lack of interest, lack of need, lack of opportunity, or a reluctance to disclose their illiteracy. From the data presented in this report, lack of need may provide an adequate explanation. In recent years, over 85% of the less well educated labour force has been employed, so very few experience an economic urgency for further education. Illiteracy, if it exists to any great extent, does not

seem to present a serious problem for the workers themselves, and so they do not bring it to the attention of educators. This, coupled with the social stigma attached to being known as an illiterate person, may keep enrollment in remedial adult education at low levels. This makes estimates of the literacy problem in the work place very uncertain.

5. HEALTH AND SAFETY ISSUES RELATED TO LANGUAGE AND LITERACY

Although it is assumed that a lack of fluency and/or literacy in the language of the work place increases occupational risks, only anecdotes or isolated instances can be cited to support this belief. Carefully conducted research which includes precise definition and measurement of literacy and language comprehension levels, and controls for such confounding variables as hazard exposure and experience (Baker, 1987) will be required in order to show a relationship between occupational injury or illness and language skills. Programs related to occupational health and safety in developing countries, where the existence of illiteracy and language differences are easily established and widespread, are based upon the more general strategies related to experience, increasing the familiarity of workers with industrial culture, and general health and safety education (Takala, 1982).

As indicated by the Advisory Council on Occupational Health and Occupational Safety Task Force on Literacy (Government of Ontario, 1985), there is no evidence which directly identifies illiteracy or language fluency as a cause of accidents, although isolated instances do exist. However, the Task Force noted that several safety-related duties, responsibilities, and opportunities are less readily available to these groups. For example, workers with poor understanding of written and/or spoken English are less likely to be involved with or make use of worksite health and safety committees. The Task Force also noted that these workers, when injured, may be less likely to apply for compensation, fearing that their job may not be available when they are fit to return to work. (This fear may be particularly well-founded in jurisdictions in which the employer is not obliged to

re-hire injured workers.) For similar reasons, they may be reluctant to report health and safety hazards to which they have been exposed. The Advisory Council Task Force argued that the problem lay not with illiteracy and language fluency itself, but rather with "the presence of hazards and/or insufficient or inappropriate instruction and training." (P.117).

Despite the lack of scientific evidence, the inability to read or understand English sufficiently could place an extra burden on some Alberta workers. Verbal or written instructions on an unfamiliar task certainly have the potential for creating difficulties. Employers should recognize their duty to ensure that workers fully understand the tasks being assigned. In addition, the workers should be aware of their responsibility to be fully informed.

The issue, in general, is how to ensure that all workers understand what is expected of them and what they have the right to expect from the employer and government in the area of health and safety. To single out workers with language or literacy difficulties is to ignore the possibility that literate, English speaking workers and employers in Alberta might be equally uninformed regarding these general areas of health and safety education. Rather than focus on the extent of language or literacy problems, perhaps the extent to which the workforce <u>in general</u> is knowledgeable about general health and safety matters should be determined.

6. CONCLUSIONS

Some conclusions can be drawn from the data despite the validity and reliability problems already described.

1. In 1981, only a very small percentage of the Alberta labour force did not speak English, indicating that language-related problems may be of minor importance. However, this conclusion is based upon a very strict criterion for language difficulties, as it assumes that workers who speak at least some English will have no health and safety related difficulties.

2. Roughly 7% of the labour force consisted of recent immigrants (10 years or less). The size of this group may be a better way to judge the potential for language related safety problems.

3. Recent immigrants found employment mainly in manufacturing and service industries, and related occupations (e.g., processing, machining, fabrication and repair).

4. In 1981, around 37% of employed persons (40% of the labour force) had not finished high school. This indicates that a large sector of the labour force has little formal education. Even among the youngest age group, it is estimated that at least 25% did not complete high school.

5. Judging from the proportion of less well educated persons who were employed, these people did not appear to be greatly handicapped by their failure to complete high school. Even in recent years, about 85% of these individuals who seek work are successful.

6. Persons with less than high school education dominate the high hazard occupations (forestry, processing, oil and gas fieldwork, construction). Many of these workers are young; therefore, any difficulties related to a lack of education will persist for many years.

7. Many adult education opportunities exist for persons with language or literacy difficulties. Although immigrants appear to take advantage of courses designed for them, only a very small proportion of persons with little formal education seek to improve their skills. It is not known why these people are not attracted to adult education opportunities, but potential explanations include lack of need, lack of interest, and a desire to conceal their illiteracy.

8. If language and literacy are health and safety concerns in Alberta, this can be determined only by research data which reveals a relationship between education level, literacy level, health and safety knowledge, and injury rates. At present, only anecdotal evidence on this issue exists.

9. Serious consideration should be given to the proposition that a narrow focus on language and literacy issues may obscure the true extent of inadequate instruction, training, and supervision on the job. Even a work force which is literate and fluent in English is at a disadvantage when these three factors are ignored.

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APPENDIX A.1

LABOUR FORCE ACTIVITY BY ETHNIC ORIGIN AND LANGUAGE

1. Immigration Status ·

	Canadian born	Immigrant	Immigrant 1971-1981
Population 15 yrs +	1341675	330945	101650
Labour force	986735	213235	76595
Participation Rate	73.5%	64.4%	75.4%
Employed	948720	206930	73760
Unemployed	38010	6310	2835
Unemployed Rate	3.9%	3.0%	3.7%
Not in Labour force	354945	117705	25055
Had Work, 1980-81	110140	21050	7405
Had work; %	8.2%	6.4%	7.3%

2. Official Language Spoken

	French only	Eng. & French	Neither
Population 15 yrs+	2215	124265	15480
Labour force	1205	96370	6330
Participation Rate	54.4%	77.6%	40.9%
Employed	1025	92385	5945
Unemployed	185	3985	385
Unemployed Rate	15.4%	4.1%	6.1%
Not in Labour force	1015	27900	9145
Had work, 1980-81	230	9505	810
Had work; %	10.4%	7.6%	5.2%

3. First Language Spoken

	English	French	Other
Population 15 yrs+	1302245	52580	317795
Laour force	956565	38105	205305
Participation Rate	73.5%	72.5%	64.6%
Employed	920165	36410	199070
Unemployed	36400	1690	6235
Unemployed Rate	4.0%	4.6%	3.1%
Not in Labour force	345680	14480	112490
Had work, 1980-81	106425	3870	20895
Had work; %	8.2%	7.4%	6.6%

Source: Statistics Canada Catalogue 92-915.

APPENDIX A.2

THE OCCUPATIONS OF RECENT IMMIGRANTS TO ALBERTA (1971-1981)

Occupation	Total	%	Immigrants 1971-1981	% of Immigrants	% of Occupation
Management	118790	9.9	5980	7.9	5.0
Science, Engineering	54905	4.6	7020	9.2	12.8
Social Science	17980	1.5	870	1.1	4.8
Art, Literature, etc.	13680	1.1	800	1.1	5.8
Clerical	220925	18.4	11715	15.4	5.3
Sales	109985	9.2	4495	5.9	4.1
Service	132350	11.0	14570	19.2	11.0
Farming	80215	6.7	1525	2.0	1.9
Forestry	3250	0.3	55	0.1	1.7
Oil & Gas Fieldwork	19180	1.6	470	0.6	2.5
Processing	24090	2.0	2515	3.3	10.4
Machining	26725	2.2	3320	4.4	12.4
Fabrication, Repair	62645	5.2	6630	8.7	10.6
Construction	116520	9.7	5695	7.5	4.9
Transport	52180	4.3	1750	2.3	3.5
Material Handling	19630	1.6	930	1.2	4.7
Equipment Operating	12830	1.1	830	1.1	6.5
Teaching, etc.	44265	3.7	1830	2.4	4.1
Medicine & Health	46370	3.9	3690	4.9	8.0
Religion	2755	0.2	335	0.4	12.2
OTHER	15695	1.3	985	1.3	6.3
TOTAL	1194965		76020		6.4

Source: Statistics Canada Catalogue 92-918.

APPENDIX A.3

LABOUR FORCE ACTIVITY BY AGE AND EDUCATION LEVEL (1981)

1. Labour force aged 15 - 24 years

	Total	Less than Grade 9	Less than High School
Population 15 - 24	476315	19365 (4.1%)	217390 (45.6%)
Labour force	350935	9860	133570
Participation Rate	73.7%	50.9%	61.4%
Employed	329765	8600	123965
Unemployed	21135	1255	9610
Unemployed Rate	6.0%	12.7%	7.2%
Not in Labour force	125420	9505	83820
Had Work, 1980-81	54040	2205	30810
Had work; %	11.3%	11.4%	14.2%

2. Labour force aged 25 - 44 years

	Total	Less than Grade 9	Less than High School
Population 25 - 44	692960	40835 (5.9%)	167105 (24.1%)
Labour force	571880	29190	128490
Participation Rate	82.5%	71.5%	76.9%
Employed	554990	27680	123630
Unemployed	16890	1505	4860
Unemployed Rate	3.0%	5.2%	3.8%
Not in Labour force	121075	11645	38620
Had work, 1980-81	44505	3245	12360
Had work; %	6.4%	7.9%	7.4%

3. Labour force aged 45 - 64 years

	Total	Less than Grade 9	Less than High School
Population 45 - 64	356745	82080 (23.0%)	112260 (31.5%)
Labour force	255560	50850	76485
Participation Rate	71.6%	62.0%	68.1%
Employed	249745	49185	74665
Unemployed	5815	1665	1820
Unemployed Rate	2.3%	3.3%	2.4%
Not in Labour force	101185	31235	35770
Had work, 1980-1981	22835	5700	7620
Had work; %	6.4%	6.9%	6.8%

Source: Statistics Canada Catalogue 92-915.

APPENDIX A.4

LABOUR FORCE ACTIVITY BY AGE AND EDUCATION LEVEL OF THE 15 - 24 YEAR OLD GROUP

1. Labour force aged 15 - 19 years

	Total	Not In School	In School
Population 15 - 19	213365	82950	130415 (61.1%)
Labour force	123955	62460	61495
Participation Rate	58.1%	75.3%	47.2%
Employed	115075	56945	58130
Unemployed	8885	5515	3370
Unemployed Rate	7.2%	8.8%	5.5%
Had Work, 1980-81	32930	7395	25535
Had work: %	15.4%	8.9%	19.6%

2. Labour force aged 15 - 24 excluding age 15-19 still in school.

	Total	Less than Grade 9	Less than High School[1]
Population 15 - 24	345900	19365 (5.9%)[2]	86975 (25.1%)[2]
Labour force	289440	9860	72075
Participation Rate	83.7%	50.9%	82.9%
Employed	271635	8600	65835
Unemployed	17765	1255	6240
Unemployed Rate	6.1%	12.7%	8.7%
Had work, 1980-81	28505	2205	5275
Had work: %	8.2%	11.4%	6.1%

Notes:

1. Calculated by subtracting those aged 15-19 still in school from the 15-24 age group with less than high school shown in Appendix A.3. these calculations assume that all students in school will complete high school.

2. Percent of those not in school. If all those in school complete high school, these figures would be 4.1% and 18.3%, respectively. If one assumes that 20% of those still in school do not complete high school (a more reasonable assumption), it is estimated that 23.7% of the 15-24 year old group have less than a high school education, and that an additional 4.1% have less than grade 9.

Source: Statistics Canada Catalogue 92-915.

APPENDIX A.5

LEVEL OF SCHOOLING AND INDUSTRY (1981)

Industry	Total Employed	%	Less than Grade 9	%	Less than High School	%
Agriculture	82755	6.9	19555	20.1	30135	8.8
Forestry	4050	0.3	885	0.9	1105	0.3
Fishing, Trapping	280	0.0	75	0.1	60	-
Mines, Oil, Gas	76945	6.4	4040	4.1	18245	5.3
Manufacturing	108005	9.0	10050	10.3	33255	9.7
Construction	128805	10.8	13150	13.5	37495	11.0
Transp. Utilities	100370	8.4	8325	8.5	31930	9.3
Trade	202680	17.0	11855	12.2	76965	22.5
Finance	65860	5.5	1480	1.5	15155	4.4
Service	336740	28.2	23380	24.0	79285	23.2
Public Admin.	88680	7.4	4725	4.8	18575	5.4
TOTAL	1195170	100.0	97520 (8.2)	100.0	342205 (28.6)	100.0

Source: Statistics Canada Catalogue 93-969.

APPENDIX A.6

LEVEL OF SCHOOLING AND OCCUPATION (1981)

Occupation	Total	%	Less than Grade 9	%	Less than High School	%
Management, Admin	118790	9.9	4820	4.8	32750	8.3
Science, Engineering	54905	4.6	440	0.4	5015	1.3
Social Science	17980	1.5	390	0.4	1950	0.5
Art, Literature, etc.	13680	1.1	275	0.3	3475	0.9
Clerical	220925	18.4	5255	5.2	77825	19.4
Sales	109985	9.2	5335	5.3	46035	11.6
Service	132350	11.0	21255	21.1	60270	15.2
Farming	80215	6.7	19250	19.2	33025	8.3
Forests and Logging	3250	0.3	925	0.9	1095	0.3
Oil & Gas Fieldwork	19180	1.6	1950	1.9	8995	2.3
Processing	24090	2.0	3760	3.7	9980	2.5
Machining	26725	2.2	1700	1.7	7350	1.9
Fabrication & Repair	62645	5.2	5960	5.9	19325	4.9
Construction Trades	116520	9.7	14065	14.0	40495	10.2
Transport	52180	4.3	7550	7.5	25375	6.4
Material Handling	19630	1.6	2600	2.6	10575	2.7
Equipment Operating	12830	1.1	685	0.7	3915	1.0
Teaching, etc.	44265	3.7	325	0.3	2410	0.6
Medicine & Health	46370	3.9	955	1.0	5055	1.3
Religion	2755	0.2	100	0.1	260	0.1
OTHER	15695	1.3	2815	2.8	6390	1.6
TOTAL	1194965		100410	8.4%	401565	33.6%

NOTE: Includes persons 15 years and older, who have at any time been employed. They may or may not be employed, or seeking work, at the time of the census. Totals are therefore different than those in Table 8.

Source: Statistics Canada Catalogue 93-969.

APPENDIX A.7

PERCENT OF WORKERS WITH LESS THAN HIGH SCHOOL EDUCATION, BY OCCUPATION, 1981

Occupation	Total	Percent of Occupation		
		Less than Grade 9	Less than High School	Total
Management, Admin	118790	4.1	27.6	31.7
Science, Engineering	54905	0.8	9.1	9.9
Social Science	17980	2.2	10.8	13.0
Art, Literature, etc.	13680	2.0	25.4	27.4
Clerical	220925	2.4	35.2	37.6
Sales	109985	4.9	41.9	46.8
Service	132350	16.1	45.5	61.6
Farming	80215	24.0	41.2	65.2
Forests and Logging	3250	28.4	33.6	62.0
Oil & Gas Fieldwork	19180	10.2	46.9	57.1
Processing	24090	15.6	41.4	57.0
Machining	26725	6.4	27.5	33.9
Fabrication & Repair	62645	9.5	30.8	40.3
Construction Trades	116520	12.1	34.8	46.9
Transport	52180	14.5	48.6	63.1
Material Handling	19630	13.2	53.9	67.1
Equipment Operating	12830	5.3	30.5	35.8
Teaching, etc.	44265	0.7	5.4	6.1
Medicine & Health	46370	2.1	10.9	13.0
Religion	2755	3.6	9.4	13.0
OTHER	15695	17.9	40.7	58.6
TOTAL	1194965	8.4%	33.6%	42.0%

Source: Statistics Canada Catalogue 93-969.